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(71) Applicant *(for all designated States except US)*: F.H. FAULDING & CO. LIMITED [AU/AU]; 115 Sherriff Street, Underdale, S.A. 5032 (AU).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: SWAMINATHAN, Kivalur, Subramaniasarma [AU/AU]; 7 Riverside Drive, Felixstow, S.A. 5070 (AU). HARDING, Ronald [GB/AU]; Unit 2, Beach Road, Beaumaris, VIC 3193 (AU).

(74) Agent: PHILLIPS ORMONDE & FITZPATRICK; 367 Collins Street, Melbourne, VIC 3000 (AU).

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(54) Title: PHARMACEUTICAL COMPOSITIONS

(57) Abstract

Pharmaceutical compositions comprising an unpleasant tasting drug, wherein the taste is masked by the inclusion of a polyhydric alcohol-based carrier in an amount sufficient to mask the unpleasant taste of the drug.

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PHARMACEUTICAL COMPOSITIONS

The present invention relates to a taste-masked pharmaceutical composition. In particular the invention relates to suspension and solution formulations taste-masked using polyhydric alcohol based carriers to obtain taste-masked products.

Many pharmaceutical drugs have unpleasant taste and therefore the oral administration of a pharmaceutical drug is an unpleasant experience leading to poor compliance of the dosage regimen by the patients.

Artificial flavourings and sweeteners have often been used to mask the taste by generally overwhelming the taste of the pharmaceutical. However, these are often inadequate and the bitter taste remains as a lingering after taste.

Other methods of masking the taste include coating the drug with a polymeric material such as ethyl cellulose or an oil, lipid or wax such as paraffins, waxes, beeswax, higher fatty acids, higher fatty acid esters, glycerin fatty acid esters or lecithin, so as to create a barrier and delay the dissolution of the drug. These methods however suffer from the disadvantage of process and formulation complexity and though sometimes suitable for solid dosage forms, in liquid formulations the drug is usually solubilized sufficiently to impart a bitter taste.

For many drugs, there is a bitter taste when dissolved in water based formulations. Oil-based vehicles are generally not satisfactory for the reason of poor mouth feel and risk of altered bioavailability.

European Patent 0 441 307 A1 describes a syrup composition containing acetaminophen or phenobarbital in a high concentration (0.4 - 5 % of drug) formulated with a polyhydric alcohol, a polymer of the polyhydric alcohol and a water soluble macromolecule including polyvinyl pyrrolidone, gum arabic, gelatin or polyvinyl polypyrrolidone and water. The patent states that polyhydric alcohol is used as a solubilizing agent and that the macromolecule is the taste modifying agent.

European Patent 312249 describes an oral pharmaceutical composition comprising a water soluble polyhydric alcohol, with lactic, gluconic and/or

ascorbic acid and at least 0.4 %w/v of calcium ion and 0.1 % w/v magnesium ion. The product is claimed to be physically stable and not bitter and astringent to taste.

Japanese Patent 04187629-A describes a high stability syrup based composition having improved taste containing active drug, oil ingredient, surfactants and water soluble polyhydric alcohol with reduced bitterness. There is no indication which of the ingredients improves the taste or if it is the combination of the ingredients.

The monograph 'The Sugar Content of Liquid Pharmaceuticals in Australia" by Richard J. Plumridge (sixth edition 1992, Twin Press, Melbourne) states in the introduction - "glycerin is not cariogenic, but as its taste-masking properties are not pronounced it is usually combined with other potentially cariogenic carbohydrates". Accordingly the prior art suggests that taste-masking cannot be achieved successfully without added components to the glycerol to achieve taste-masking.

The prior art discloses the use of polyhydric alcohols for a number of uses, but does not disclose the use of glycerol to mask the bitter or unpleasant taste of pharmaceutically active drugs.

In many therapeutic applications the presence of surfactants is undesirable. The presence of large amounts of water is undesirable in pharmaceutical preparations due to considerations of microbial spoilage and instability of some drugs in an aqueous environment. Moreover the products produced in the prior art are not completely taste-masked and represent only a degree of improvement in the taste quality of the product.

The need is therefore apparent for a formulation system that is able to provide pleasant tasting bitterness-free compositions of unpleasant tasting drugs without use of substantial quantities of water or surfactants. It would be desirable to provide such a pharmaceutical composition which has the unpleasant taste masked and which also provides a pleasant mouth feel with substantially unchanged bioavailability.

Accordingly, it is an object of the present invention to overcome or at least alleviate one or more of the difficulties or deficiencies related to the prior

art.

Accordingly in a first aspect of the invention, there is provided a taste-masked pharmaceutical composition including:

at least one pharmaceutically active ingredient; and

an effective amount of a polyhydric alcohol based carrier sufficient to taste-mask the pharmaceutically active ingredient.

Applicants have sought to dissolve or suspend the drug in a pharmaceutically acceptable solvent which is preferably hydrophilic and which includes a polyhydric alcohol based carrier including a polyol or polyhydric alcohol such as propylene glycol (PPG) or glycerine. It has surprisingly been found that these carriers are extremely good at masking the unpleasant taste of certain drugs.

The terms "polyol" and "polyhydric alcohol" are used interchangeably throughout the specification.

As used herein the phrase "polyhydric alcohol based carrier" means a vehicle including any polyhydric alcohol, or any combination of polyhydric alcohol such as glycerol, propylene glycol and poly (ethylene glycol) excluding carbohydrates and carbohydrate derived alcohols such as mannitol, sorbitol, xylitol, sucrose or glucose.

Throughout the description and claims of this specification, the word "comprise" and variations of the word, such as "comprising" and "comprises", is not intended to exclude other additives, components, integers or steps.

The pharmaceutically active ingredient may be provided in any suitable form. The pharmaceutically active ingredient may be provided in the form of its neutral or salt form including the prodrugs and metabolites of the drugs, molecular, acid-base and ion-exchange complexes of suitable complexants and may be in the form of crystals, amorphous powders, adsorbates, microcapsules or mixtures.

The preferred pharmaceutically active ingredient, as stated above, may include any one or more of the following:

antacids including aluminium hydroxide and magnesium hydroxide, anti-inflammatory substances, coronary dilators, cerebral dilators, peripheral

vasodilators, anti-invectives, psychotropic, anti-maniacs, stimulants, anti-histamines, laxatives, decongestants, vitamins, gastro-intestinal sedatives, anti-diarrhoeal preparations, anti-anginal drugs, vasodilators, anti-arrhythmic, anti-hypertensive drugs, vasoconstrictors and migraine treatments, anti-coagulants and anti-thrombotic drugs, analgesics, anti-pyretics, hypnotics, sedatives, anti-emetics, anti-nauseates, anti-convulsants, neuromuscular drugs, hyper-and hypoglycaemic agents, thyroid and anti-thyroid preparations, diuretics, anti-spasmodics, uterine relaxants, mineral and nutritional additives, anti-obesity drugs, anabolic drugs, erythropoietic drugs, anti-asthmatics, bronchodilators, expectorants, cough suppressants, mucolytics and anti-uricemic drugs.

Examples of drugs suitable for use in this invention are piroxicam, chlorpheniramine, clarithromycin, ibuprofen, ketoprofen, diclofenac, ambroxol, diphenhydramine, diltiazem, alprazolam, phenylpropanolamine, guaiphenesin, bromopheniramine, metoclopramide dihydrochloride, tropisetron, andansetrol, caffeine, oxybutynin hydrochloride, ticlopidine, roxythromycin, ethromycin, azithromycin. Preferably the pharmaceutically active ingredient includes a H_2-receptor antagonist. The H_2-receptor antagonists may preferably be selected from one or more of the group including cimetidine, ranitidine, nizatidine and famotidine.

In another preferred aspect of the invention the pharmaceutically active ingredient includes a mixture of a H_2-receptor antagonist and an antacid. Desirably, the antacid is selected from aluminium hydroxide and/or magnesium hydroxide.

The pharmaceutically active ingredient may be in particulate form or may combine with a pharmaceutically active carrier to provide a pharmaceutically active unit. The active unit may be of any suitable particle size. Particle sizes of approximately 0.1 to 250μm have been found to be suitable. Particle sizes of approximately 35 to 125μm have been found to be particularly suitable. The pharmaceutically active carrier may be inert carrier known in the art.

The active unit may be coated. The coating material may include a polymer including at least one of the following methyl cellulose, ethyl cellulose,

hydroxypropyl cellulose, hydroxypropyl methyl cellulose, hydroxybutyl methyl cellulose, cellulose acetate, cellulose propionate (lower, medium or higher molecular weight), cellulose acetate propionate, cellulose acetate butyrate, cellulose acetate phthalate, carboxymethyl cellulose, cellulose triacetate, cellulose sulphate sodium salt, poly(methyl methacrylate), poly (ethyl methacrylate), poly (butyl methacrylate), poly (isobutyl methacrylate), poly (hexyl methacrylate), poly (phenyl methacrylate), poly (methyl acrylate), poly (isopropyl acrylate), poly (isobutyl acrylate), poly (octadecyl archlute), poly (ethylene), poly (ethylene) low density, poly (ethylene)high density, (poly propylene), poly (ethylene glycol), poly (ethylene oxide), poly (ethylene terephthalate), poly(vinyl alcohol), poly(vinyl isobutyl ether), poly(viny acetate), poly (vinyl chloride) and polyvinyl pyrrolidone, ethyl cellulose or dispersions of ethyl cellulose such as those sold under the trade designation Aquacoat or Surelease, acrylic and/or methacrylic ester polymers, cellulose acetates, butyrates or propionates or copolymers of acrylates or methacrylates having a low quaternary ammonium content and the like.

The particles may be coated so that the pharmaceutically active ingredient displays a sustained release or immediate release (depending on the coating composition) profile. The coatings may be water soluble, water insoluble but permeable or soluble as a function of pH as required to achieve the desired result.

The polyol or polyhydric alcohol component of the taste-masked composition according to the present invention may be selected from one or more of the group consisting of propylene glycol, glycerol or polymers of ethyleneglycol, propylene glycol and glycerol such as diethylene glycol, dipropylene glycol and diglycerol, any polymer of ethylene oxide with a molecular weight from 200 to 20,000, for example, PEG 4000, PEG 6000, PEG 12000 etc, and block copolymers of ethylene oxide and propylene oxide commercially known as Poloxamers. The poloxamers are commercially available as Pluronic (BASF) and Teric (ICI). The molecular weight range of the poloxamers used is 2000-20,000. Preferably PEG having a molecular weight higher than 6000, are used in a mixture with lower molecular weight

PEG or polyhydric alcohols that are liquids.

Preferably the polyhydric alcohol is a low molecular weight polyhydric alcohol such as glycerol or propylene glycol or mixtures thereof. However, taste-masking may also be achieved using high molecular weight polyhydric alcohols.

The polyhydric alcohol based carrier may include a single polyol or a combination of polyols. Preferably the combination includes a polyol with a polyethylene glycol, and/or poloxamer and/ or water. For instance glycerol may be used on it's own or in combination with propylene glycol to enhance the taste-masking with glycerol or the combination or single use of glycerol may be enhanced by the addition of any one or together of PEG, and poloxamer. In some cases, the pharmaceutically active ingredient may not be soluble in glycerol alone. Accordingly, it is preferred to use a mixture of propylene glycol and glycerol. Preferably the ratio is approximately 1:4. The propylene glycol may act as a solubilizer. Alternatively, polymer coated particles of the insoluble drug, described as a pharmaceutical unit, may be suspended in the carrier.

The ratio of the pharmaceutically active ingredient to the polyol is preferably from approximately 1:0.5 to approximately 1:20000.

Additionally, though the preferred formulation has no water added, it is possible to incorporate water in of up to approximately 40 % by weight based on the total weight of the pharmaceutical composition, preferably up to approximately 30%, more preferably up to 20%, most preferably no water is added.

Other functional agents may be used to improve the formulation for final presentation including carriers or excipients, fillers, flavouring agents, stabilizing agents, colourants, flavour enhancers, viscosity modifying agents, suspending agents and preservatives. The other functional agents may be present in amounts of up to approximately 50% by weight based on the total weight of the composition. Preferably, the other functional agents are present in amounts of up to approximately 35% by weight based on the total weight of the composition.

The proportion of the drug to the other ingredients is such that a

convenient therapeutic dose may be drawn from the bulk.

The taste-masked pharmaceutical composition depending on the method employed for production may be provided in the form of a clear solution, dispersion or emulsion. A liquid formulation is preferred.

In a further aspect of the present invention, there is provided a method of preparing a taste-masked pharmaceutical composition including:

a pharmaceutically active ingredient; and

an effective amount of a polyhydric alcohol based carrier sufficient to taste-mask the pharmaceutically active ingredient;

which method includes:

providing

a sufficient amount of a pharmaceutically active ingredient; and

a polyhydric alcohol based carrier including a polyhydric alcohol; and

suspending, dispersing, dissolving or mixing the pharmaceutically active ingredient with the polyhydric alcohol based carrier to obtain a homogeneous taste-masked mixture such that an unpleasant taste of the pharmaceutically active ingredient is substantially masked.

In a further aspect of the present invention there is provided a method of preparing a taste-masked pharmaceutical composition including:

a pharmaceutically active unit including a pharmaceutical active ingredient; and

an effective amount of a polyhydric alcohol based carrier sufficient to taste-mask the pharmaceutically active ingredient;

which method includes:

providing

a sufficient amount of a pharmaceutically active unit; and

a polyhydric alcohol based carrier including a polyhydric alcohol;

and

suspending, dispersing, dissolving or mixing the pharmaceutically active unit with the polyhydric alcohol based carrier to obtain a homogeneous taste-

masked mixture such that an unpleasant taste of the pharmaceutically active ingredient is substantially masked.

In another aspect of the invention, the method includes the preliminary step of precoating the pharmaceutically active ingredient with any number of polymers disclosed above so as to achieve some taste-masking, sustained release or immediate release of the pharmaceutical.

The precoating of the pharmaceutical may be performed by any methods known in the art such as fluid bed coating, spray drying, spray congealing and coacervation.

The present invention will now be more fully described with reference to the accompanying examples. It should be understood, however that the following description is illustrative only and should not be taken in any way as a restriction on the generality of the invention as specified above.

EXAMPLE 1

Taste-masked Cimetidine Liquid

Ingredient	Amount
Cimetidine	20 gm
Glycerol	to 1 litre
Talin	0.2 gm
peppermint oil	0.3 gm

Glycerol is warmed to 35^{0}C and the required quantity of cimetidine is added with stirring until dissolved. Talin and peppermint oil are then added and stirred for 10 min. The product obtained was tested for taste acceptability by a panel evaluation.

Sample	Comment	No. of Panelists
Sample from example 1.	Pleasant taste	4
	Slightly bitter	0
	Unpleasant	0
Suspension of 2 % w/v cimetidine in water	Pleasant taste	0
	Slightly bitter	0
	Unpleasant	4

EXAMPLE 2

Taste-masked Cimetidine

The following list of ingredients were weighed:-

Cimetidine USP	3 gm
Xylitol micronised	30 gm
Coolmint flavour	0.075 gm
Natural vanilla flavour	0.75 gm
Propylene glycol/Glycerol, 1:4	to 150 ml

The mixture of propylene glycol and glycerol was added to the mixture of flavours, mixed and warmed to 70-80°C. Cimetidine powder was added and stirred until dissolved. The mixture was cooled to room temperature and xylitol added and stirred until a smooth mixture was obtained.

The product has a pleasant, sweet taste without bitterness.

EXAMPLE 3

Taste-masked Ambroxol Hydrochloride

Ambroxol hydrochloride 600 mg was dissolved in a mixture of propylene glycol 20 ml and glycerol 80 ml. The mixture was warmed to 60°C and stirred until the drug was entirely dissolved. Peppermint oil 0.03 %w/v was added and the mixture cooled with stirring.

EXAMPLE 4

Taste-masked Ranitidine Hydrochloride

Ranitidine hydrochloride 1.5 gm. was dissolved in propylene glycol 20 ml and made to 100 ml with glycerol. The mixture was warmed to 40°C and stirred until the drug was entirely dissolved. Peppermint oil 0.03 %w/v was added and the mixture cooled with stirring.

The product was found to be superior to taste by a taste panel as compared to a solution of the same concentration in 70 % sorbitol.

EXAMPLE 5

Taste-masked Alprazolam

50 mg of Alprazolam was added to a 1:4 mixture of propylene glycol

and glycerol, 500 ml. The mixture was warmed to 80° with stirring until the drug went into solution and cooled. Peppermint oil 0.03 % was added and mixed well.

The product has no bitter taste as compared to a 0.01 % w/v suspension in an aqueous 70% sorbitol solution.

Finally, it is to be understood that various other modifications and/or alterations may be made without departing from the spirit of the present invention as outlined herein.

Claims:

1. A taste-masked pharmaceutical composition including

at least one pharmaceutically active ingredient; and

an effective amount of a polyhydric alcohol based carrier, sufficient to taste-mask the pharmaceutically active ingredient.

2. A taste-masked pharmaceutical composition according to claim 1, wherein the pharmaceutically active ingredient includes one or more of the following compounds selected from the group including:

antacids including aluminium hydroxide and magnesium hydroxide, anti-inflammatory substances, coronary dilators, cerebral dilators, peripheral vasodilators, anti-invectives, psychotropic, anti-maniacs, stimulants, anti-histamines, laxatives, decongestants, vitamins, gastro-intestinal sedatives, anti-diarrhoeal preparations, anti-anginal drugs, vasodilators, anti-arrhythmic, anti-hypertensive drugs, vasoconstrictors and migraine treatments, anti-coagulants and anti-thrombotic drugs, analgesics, anti-pyrites, hypnotics, sedatives, anti-emetics, anti-nauseates, anti-convulsants, neuromuscular drugs, hyper-and hypoglycaemic agents, thyroid and anti-thyroid preparations, diuretics, anti-spasmodics, uterine relaxants, mineral and nutritional additives, anti-obesity drugs, anabolic drugs, erythropoietic drugs, anti-asthmatics, bronchodilators, expectorants, cough suppressants, mucolytics and anti-uricemic drugs.

3. A taste-masked pharmaceutical composition according to claim 1 or 2, wherein the pharmaceutically active ingredient includes an H_2-receptor antagonist selected from one or more of the group including cimetidine, ranitidine, nizatidine and famotidine.

4. A taste-masked pharmaceutical composition according to any one of claims 1 to 3, further including an antacid selected from the group including aluminium hydroxide and magnesium hydroxide.

5. A taste-masked pharmaceutical composition according to any one of claims 1 to 4, wherein the pharmaceutically active ingredient is included in a pharmaceutically active unit and wherein said pharmaceutically active unit is in a particulate form having a particle size of from approximately 0.1 to 250 μm.

6. A taste-masked pharmaceutical composition according to any one of

claims 1 to 5, wherein the pharmaceutically active ingredient is coated with a coating material selected from the group including :

a polymer including at least one of the following methyl cellulose, ethyl cellulose, hydroxypropyl cellulose, hydroxypropyl methyl cellulose, hydroxybutyl methyl cellulose, cellulose acetate, cellulose propionate (lower, medium or higher molecular weight), cellulose acetate propionate, cellulose acetate butyrate, cellulose acetate phthalate, carboxymethyl cellulose, cellulose triacetate, cellulose sulphate sodium salt, poly(methyl methacrylate), poly (ethyl methacrylate), poly (butyl methacrylate), poly (isobutyl methacrylate), poly (hexyl methacrylate), poly (phenyl methacrylate), poly (methyl acrylate), poly (isopropyl acrylate), poly (isobutyl acrylate), poly (octadecyl acrylate), poly (ethylene), poly (ethylene) low density, poly (ethylene)high density, (poly propylene), poly (ethylene glycol), poly (ethylene oxide), poly (ethylene terephthalate), poly(vinyl alcohol), poly(vinyl isobutyl ether), poly(viny acetate), poly (vinyl chloride) and polyvinyl pyrrolidone, ethyl cellulose or dispersions of ethyl cellulose such as those sold under the trade designation Aquacoat or Surelease, acrylic and/or methacrylic ester polymers, cellulose acetates, butyrates or propionates or copolymers of acrylates or methacrylates having a low quaternary ammonium content and the like.

7. A taste-masked pharmaceutical composition according to any one of claims 1 to 6, wherein the polyhydric alcohol based carrier includes a polyhydric alcohol selected from the group including glycerol, propylene glycol or polymers of ethylene glycol, propylene glycol and glycerol; any polymers of ethylene oxide with a molecular weight from 200 to 20,000 and block polymers of ethylene oxide and propylene oxide (Poloxamers).

8. A taste-masked pharmaceutical composition according to any one of claims 1 to 7 wherein the polymers of ethylene glycol, propylene glycol and glycerol are selected from the group including diethylene glycol, dipropylene glycol and diglycerol.

9. A taste-masked pharmaceutical composition according to any one of claims 1 to 8, wherein the polymer of ethylene oxide is selected from the group including PEG 4000, PEG 6000 or PEG 12000 or any combination thereof.

10. A taste-masked pharmaceutical composition according to any one of claims 1 to 9, wherein the poloxamer is selected from Pluronic ™(BASF) or Teric™(ICI) having a molecular weight in the range of 2,000 to 20,000.

11. A taste-masked pharmaceutical composition according to any one of claims 1 to 10, wherein the polyhydric alcohol based carrier includes a single polyhydric alcohol.

12. A taste-masked pharmaceutical composition according to any one of claims 1 to 11, wherein the polyhydric alcohol is glycerol.

13. A taste-masked pharmaceutical composition according to any one of claims 1 to 12, wherein the polyhydric alcohol based carrier includes a combination of polyhydric alcohol and polyhydric alcohol esters.

14. A taste-masked pharmaceutical composition according to claim 13, wherein the combination includes a polyhydric alcohol with polyethylene glycol, and/or poloxamer and/or water.

15. A taste-masked pharmaceutical composition according to claims 13 or 14, wherein the combination further includes glycerol and/or propylene glycol.

16. A taste-masked pharmaceutical composition according to claim 15, wherein the mixture of propylene glycol and glycerol is in a ratio of approximately 1:4.

17. A taste-masked pharmaceutical composition according to any one of claims 1 to 16, wherein the ratio of the pharmaceutically active ingredient to the polyhydric alcohol is in the range of about 1:0.5 about 1:20,000.

18. A taste-masked pharmaceutical composition according to any one of claims 1 to 17, further including water in an amount up to approximately 40% by weight based on the total weight of the pharmaceutical composition.

19. A taste-masked pharmaceutical composition according to claim 18 in the form of a liquid formulation.

20. A method of preparing a taste-masked pharmaceutical composition including:

a pharmaceutically active ingredient; and

an effective amount of a polyhydric alcohol based carrier sufficient to taste-mask the pharmaceutically active ingredient;

which method includes:

providing

a sufficient amount of a pharmaceutically active unit; and

a polyhydric alcohol based carrier including a polyhydric alcohol;

and

suspending, dispersing, dissolving or mixing the pharmaceutically active ingredient with the polyhydric alcohol based carrier to obtain a homogeneous taste-masked mixture such that an unpleasant taste of the pharmaceutically active ingredient is substantially masked.

21. A method of preparing a taste-masked pharmaceutical composition including:

a pharmaceutically active unit including a pharmaceutically active ingredient and

an effective amount of a polyhydric alcohol based carrier sufficient to taste-mask the pharmaceutically active ingredient;

which method includes:

providing

a sufficient amount of a pharmaceutically active unit; and

a polyhydric alcohol based carrier including a polyhydric alcohol;

and

suspending, dispersing, dissolving or mixing the pharmaceutically active unit with the polyhydric alcohol based carrier to obtain a homogeneous taste-masked mixture such that an unpleasant taste of the pharmaceutically active ingredient is substantially masked.

22. A method according to claim 20 or 21, further including the preliminary step of precoating the pharmaceutically active ingredient or pharmaceutically active unit with a coating material selected from the group including :

a polymer including at least one of the following, methyl cellulose, ethyl cellulose, hydroxypropyl cellulose, hydroxypropyl methyl cellulose, hydroxybutyl methyl cellulose, cellulose acetate, cellulose propionate (lower, medium or

higher molecular weight), cellulose acetate propionate, cellulose acetate butyrate, cellulose acetate phthalate, carboxymethyl cellulose, cellulose triacetate, cellulose sulphate sodium salt, poly(methyl methacrylate), poly (ethyl methacrylate), poly (butyl methacrylate), poly (isobutyl methacrylate), poly (hexyl methacrylate), poly (phenyl methacrylate), poly (methyl acrylate), poly (isopropyl acrylate), poly (isobutyl acrylate), poly (octadecyl acrylate), poly (ethylene), poly (ethylene) low density, poly (ethylene)high density, (poly propylene), poly (ethylene glycol), poly (ethylene oxide), poly (ethylene terephthalate), poly(vinyl alcohol), poly(vinyl isobutyl ether), poly(viny acetate), poly (vinyl chloride) and polyvinyl pyrrolidone, ethyl cellulose or dispersions of ethyl cellulose such as those sold under the trade designation Aquacoat or Surelease, acrylic and/or methacrylic ester polymers, cellulose acetates, butyrates or propionates or copolymers of acrylates or methacrylates having a low quaternary ammonium content and the like so as to achieve some taste-masking, sustained release or immediate release of the pharmaceutically active ingredient.

23. A taste-masked pharmaceutical composition according to claim 1, substantially as hereinbefore described with reference to any one of the examples.

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/AU 97/00154

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl[6]: A61K 47/10, 47/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61K and search terms as indicated below

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
DERWENT, JAPIO, CASM } POLYHYDRI()ALCOHOL OR GLYCEROL OR POLYPROPYLENE()GLYCOL OR POLYETHYLENE()OXIDE OR POLYETHYLENE()GLYCOL OR DIETHYLENE()GLYCOL OR DIPROPYLENE()GLYCOL OR DIGLYCEROL) AND (TASTE () MASK:)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	US 5 602 182 A (AMERICAN HOME PRODUCTS CORPORATION) 11 February 1997 column 2, lines 23-31	1-4, 7-10, 17-21
P, X	US 5 563 177 A (AMERICAN HOME PRODUCTS CORPORATION) 8 October 1996 column 2, lines 22-30	1-4, 7-10, 17-21
P, X	WO 96/23486 A (AMERICAN HOME PRODUCTS CORPORATION) 8 August 1996 page 3, lines 9-17	1-4, 7-10, 17-21

[X] Further documents are listed in the continuation of Box C

[X] See patent family annex

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Date of the actual completion of the international search	Date of mailing of the international search report
22 April 1997	05.05.1997
Name and mailing address of the ISA/AU AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (06) 285 3929	Authorized officer JOHN G. HANSON Telephone No.: (06) 283 2262

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C (Continuation) **DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95/34276 A (THE PROCTER AND GAMBLE COMPANY) 21 December 1995 page 2, lines 14-16 and 20-22 and page 3, line 35 - page 4, line 2	1, 7, 11, 17-21
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A	GB 2 081 092 A (YAMANOUCHI PHARMACEUTICAL CO. LTD.) 17 February 1982	
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.
PCT/AU 97/00154

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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END OF ANNEX